



Distributed Software Systems



Teachers

- ▶ **Prof. Giacomo Cabri**
 - ▶ Tel. 059/2056190
 - ▶ Email giacomo.cabri@unimore.it

- ▶ **Prof. Franco Zambonelli**
 - ▶ Email franco.zambonelli@unimore.it

Training Goals

- ▶ The aim of the course is to present the main **models** and **technologies** for the management of distributed software systems
- ▶ The specific goals are the study of the **architectures** of advanced distributed systems. In particular, we will analyze the **client-server** systems based on **objects**, the **P2P** systems, the systems based on **autonomous components** (agents) and their coordination issues. Finally, we will analyze the technologies for the **mobility** and the related issues, to arrive at scenarios of ubiquitous computing.

Program

- ▶ **Distributed systems**

- ▶ Introduction and general concepts
- ▶ Distributed communication and synchronization
- ▶ Distributed file system

- ▶ **Distributed object architectures**

- ▶ RPC
- ▶ RMI
- ▶ CORBA
- ▶ .NET

- ▶ **Mobility**

- ▶ **State of the art**

- ▶ Introduction to Complex Adaptive Systems
- ▶ Cellular Automata
- ▶ Small World Networks
- ▶ Scale Free Networks
- ▶ Autonomous Agents
- ▶ Multiagent Systems
- ▶ Agent Oriented Software Engineering
- ▶ Swarm Intelligence
- ▶ Field-based Coordination

Exam

- ▶ Distributed Software Systems (6 CFU)
 - ▶ Oral exam concerning all the contents
- ▶ Distributed Software Systems and Lab. (9 CFU)
 - ▶ Oral exam concerning all the contents
 - ▶ Project
- ▶ A 3-person project can be exploited to achieve 3 CFU for Information Technology Laboratory (Laboratorio di Ingegneria Informatica)

Projects

- ▶ Two choices
 1. Development of a distributed application (prof. Cabri)
 2. Simulation of complex systems (prof. Zambonelli)
- ▶ See the course web site for more details

Material

- ▶ Course site:
- ▶ https://www.agentgroup.unimore.it/wiki/index.php/Sistemi_Software_Distribuiti
- ▶ Slides of the book “Distributed Systems – Principles and Paradigms”, can be found at:
 - ▶ <http://www.prenhall.com/tanenbaum>

Reference texts

- ▶ Teachers' slides

- ▶ Books:

- ▶ A. Tanenbaum, M. van Steen, Distributed Systems - Principles and Paradigms, Prentice Hall
- ▶ An Introduction to Multiagent Systems by Michael Wooldridge. Published in February 2002 by John Wiley & Sons (Chichester, England). ISBN 0 47149691X
- ▶ Stefano Russo, Carlo Savy, Domenico Cotroneo, Antonio Sergio, "Introduzione a CORBA", McGraw Hill